Complications of primary repair of colon injury: literature review of 2,964 cases

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Authors' objectives
To evaluate the safety and efficacy of primary repair of colon injuries.

Searching
MEDLINE was searched from 1966 to 1997 for English language articles. Additional articles were identified from citations. Selected historical articles were also obtained.

Study selection
Study designs of evaluations included in the review
Retrospective and prospective studies of all designs.

Specific interventions included in the review
Simple suture or resection and anastomosis.

Participants included in the review
Civilians with colon injuries.

Outcomes assessed in the review
Leak rate and its consequences (repair failure, abscesses, deaths, other complications).

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
It is not stated how many authors extracted data or how disagreements were resolved. Data were extracted on: time period of the study, number of patients, number of primary repairs type of surgery, number of leaks, abscesses, deaths and other complications, outcomes of suture line failures, complications associated with exteriorisation of colon repairs and complications associated with colostomy closure.

Methods of synthesis
How were the studies combined?
Total numbers of patients and percentages of leaks within each study type are listed. Statistical analysis was done using Fisher's exact test where appropriate.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.

Results of the review
Twenty-seven retrospective studies (n=4908), three prospective case series (n=227), three prospective randomised studies (n=236). Nineteen of these studies detailed suture line failures and their consequences (n=66), nine studies...
detailed comparative experience with colostomy closure (n=809) and nine studies dealt with exteriorisation of colon repairs (n=359).

There were 62 (2.4%) failures in 2627 primary repairs based on retrospective studies (based on surgeon discretion or absence of risk factors), range 1.3% for simple suture - 5.7% for resection and anastomosis. In prospective series of 227 patients repaired without exclusionary criteria there were 2 (0.88%) suture line failures. In prospective randomised trials without exclusionary criteria 127 primary repairs had less morbidity (i.e. fewer complications such as intra-abdominal abscesses or wound dehiscence) compared with 109 colostomy patients (p<0.02). The leak rate after resection and anastomosis (5.7%) is greater than after simple suture of perforation (1.3%, p<0.01). The 66 colon repair leaks were treated by conversion to colostomy or led to fistulae that usually healed spontaneously. A preponderance of failed repairs occurred in the setting of multiple injuries of comorbid conditions.

Authors' conclusions
Penetrating and blunt colon injuries in civilian practice are safely managed by primary repair but colostomy may still be advised in selected cases.

CRD commentary
There are many details missing from this review. The research question and inclusion criteria are clear and some detail is given of the literature search but in restricting the search to one database and English language publications has probably led to some studies being missed. Few study details are given so it is difficult to assess how much variation there was between participants (for example) in the included studies. The way the data was pooled was inappropriate. The authors simply added the total number of events of interest and divided by the total number of subjects without investigating heterogeneity or weighting the studies in any way. Validity is not assessed, which restricts the confidence which can be placed in the results, however different study designs are combined separately. The authors' conclusions overemphasise any advantage of primary colon repair, when the above methodological limitations are taken into account.

Implications of the review for practice and research
The authors did not state any implications for further research and practice.

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**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.